

Organic and Electrochemistry Review

- What are 3 things in your daily life that are organic chemicals?
-anything plastic, gasoline, proteins, carbohydrates, medicines etc (many possible answers)
- What elements make up hydrocarbons?
-carbon and hydrogen
- What is the general formula for an alkane?
- C_nH_{2n+2}
- Complete the chart below.

| Name | Formula | Structural Diagram | Line Diagram |
|---------|-------------|--|--------------|
| propane | C_3H_8 | <pre> H H H H-C - C - C-H H H H </pre> | |
| pentane | C_5H_{12} | <pre> H H H H H H-C - C - C - C - C-H H H H H H </pre> | |
| heptane | C_7H_{16} | <pre> H H H H H H H H-C - C - C - C - C - C - C-H H H H H H H H </pre> | |
| nonane | C_9H_{20} | <pre> H H H H H H H H H H-C - C - C - C - C - C - C - C - C-H H H H H H H H H H </pre> | |

- What is the difference between an alkane, alkene and alkyne with respect to the types of bonds between carbons.
-alkane is all single carbon to carbon bonds
-an alkene has at least 1 double bond
-an alkyne has at least 1 triple bond
- What functional group is in each of the following types of compounds?
 - alcohol
-OH
 - carboxylic acid

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      O
      ||
    - C - OH
          
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 - ketone (carbonyl not on the end)

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      O
      ||
    CH3-C-CH3
          
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 - aldehyde (carbonyl on the end)

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      O
      ||
    - C - H
          
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 - amine
-NH₂

7. Name the following.

| Structure | Name |
|-----------|---------------------------|
| | 3-ethyl-2-methylpentane |
| | 3-chlorohex-2-ene |
| | 3-ethyl-4-methylheptane |
| | 1-fluoro-4-nitrohex-2-yne |

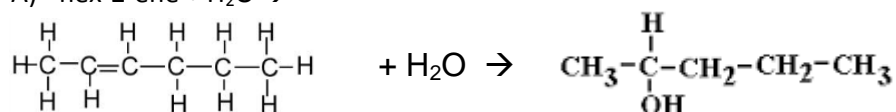
8. Draw line and structural diagrams for the following.

| Name | Line Diagram | Structural Diagram |
|--------------------------|--------------|--------------------|
| 2-bromo-3-ethylhexane | | |
| 2-chloropent-2-ene | | |
| 2,3-dimethylhept-4-yne | | |
| 1-amino-2-nitrobut-2-ene | | |

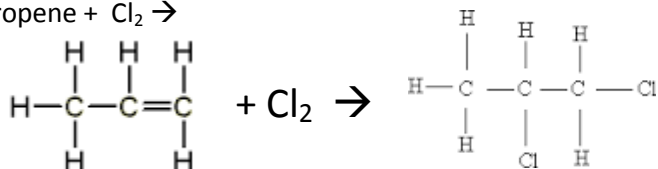
9. What are the products of complete combustion?

-carbon dioxide and water gases

10. What are the problems associated with incomplete combustion?
-produces ash and carbon monoxide (which is poisonous)
11. What compounds are used as artificial scents and flavours? How are they made?
-esters
-reacting an alcohol and carboxylic acid
12. What is a polymer?
-a large molecule made of repeating units
13. Distinguish between natural and synthetic polymers? Give 2 examples of each.
-natural are found in nature examples: cotton, rubber, carbohydrates, proteins
-synthetic are man-made examples: plastic, PVC, polystyrene
14. Complete the following reactions by structural diagrams of all reactants and products. Also indicate the type of reaction.

A) hex-2-ene + H₂O →

Type: _____ ADDITION _____

B) propene + Cl₂ →

Type: _____ ADDITION _____

15. In the reactions below identify which substance loses electrons and which substance gains.

A) $\text{Cu} + 2\text{Ag}^+ \rightarrow \text{Cu}^{2+} + 2\text{Ag}$

-Cu loses 2 electrons

-Ag⁺ gains 1 electronB) $\text{Fe} + \text{Cu}^{2+} \rightarrow \text{Fe}^{2+} + \text{Cu}$

-Fe loses 2 electrons

-Cu²⁺ gains 2 electrons

16. When a nail is galvanized what metal is it coated with?

-zinc

17. What is corrosion? Give 2 ways to prevent corrosion. Explain each method.

-the reaction of a metal with oxygen causing it to deteriorate

1. Painting: covering the metal with a layer of paint to protect it from the oxygen

2. Galvanizing: coating with a protective layer of zinc

3. Coating with oil: protective layer of oil is applied to limit contact with oxygen

18. When using a burner what colour of flame do you want? Give 2 reasons why.

-blue

-complete combustion which is hotter and does not make carbon monoxide or ash (so its also cleaner)